What is claimed is:

1.   A method, comprising:

receiving information associated with an application;

determining a periodic control signal based on the information, the periodic control signal configured to drive an actuator having a rotatable mass such that the mass rotates to produce a vibration having a magnitude and a frequency, the magnitude of the vibration being based on a duty cycle of the control signal and independent of the frequency of the vibration; and

sending the periodic control signal to the actuator.

2.   The method of claim 1, wherein the control signal has at least one of an on time and an off time, the on-time of the control signal being associated with the magnitude of the vibration.

3.   The method of claim 1, wherein the control signal has at least one of an on time and an off time, the on-time of the control signal is associated with a percentage of a period of the vibration, the percentage is proportional to a desired magnitude of the vibration.

4.   The method of claim 1, wherein:

the control signal has at least one of an on time and an off time, the on-time of the control signal being associated with the magnitude of the vibration,

the on-time of the control signal is determined based on a selected frequency of the vibration,

if the selected frequency is below a predetermined threshold frequency, the on-time is determined using a first method, and

if the selected frequency is above the predetermined threshold frequency, the on-time is determined using a second method.

5.   The method of claim 1, wherein:

the control signal has at least one of an on time and an off time, the on-time of the control signal being associated with the magnitude of the vibration,

the on-time of the control signal is determined based on a selected frequency of the vibration,

if the selected frequency is below a predetermined threshold frequency, the on-time is determined as a percentage of a period of the vibration, and

if the selected frequency is above the predetermined threshold frequency, the on-time is determined as a predetermined amount of time for each period of the vibration.

6.   The method of claim 1, wherein the actuator is disposed within a gamepad controller, the application associated with a host microprocessor of a host computer, the vibration is correlated with at least an event and an interaction occurring within a graphical environment of the application.

7.   The method of claim 1, further comprising:

monitoring a position of the mass about the axis of rotation so that the mass rotates in response to the control signal.

8.   The method of claim 1, the information being associated with a kinesthetic effect, the method further comprising:

mapping from the kinesthetic effect to a vibrotactile effect based on the information to produce the control signal.

9.   The method of claim 1, the information being associated with a kinesthetic effect, the method further comprising:

mapping from the kinesthetic effect to a vibrotactile effect based on the information to produce the control signal, the actuator being disposed within a haptic feedback device having a local microprocessor, the mapping being performed by the local microprocessor.

10.   The method of claim 1, the information being associated with a kinesthetic effect, the method further comprising:

mapping from the kinesthetic effect to a vibrotactile effect based on the information to produce the control signal, the actuator being disposed within a haptic feedback device having a local microprocessor, the mapping being performed by the local microprocessor, the gamepad controller including a joystick having two degrees of freedom and configured to provide input to the host computer when manipulated.

11.   The method of claim 1, further comprising:

sending an initial control signal to the actuator, the mass initiating rotation before initiation of the vibration.

12.   The method of claim 1, wherein the actuator is one of a plurality of actuators disposed within a haptic feedback device, each actuator from the plurality of actuators is individually controllable to collectively produce the vibration.

13.   The method of claim 1, wherein the control signal is modified by envelope parameters received from a host computer, the envelope parameters modifying the magnitude of the vibration.

14.   The method of claim 1, wherein the information includes a high level command and at least one parameter, the actuator being disposed within a vibrotactile interface device having a local microprocessor separate from a host microprocessor, the local processor configured to parse the high level command.

15.   The method of claim 1, wherein the information includes a high level command and at least one parameter, the high level command is a vibration command, the at least one parameter includes a magnitude parameter and a frequency parameter associated with the vibration.

16.   An apparatus, comprising:
        a housing;
        an actuator coupled to the housing and including an eccentric mass coupled to a rotatable shaft of the actuator defining an axis of rotation; and
        a circuit coupled to the actuator, the circuit configured to produce a control signal such that, when the control signal is received by the actuator, the actuator induces a vibration having a magnitude and a frequency by rotating the mass about the axis of rotation, the magnitude of the vibration being based on a duty cycle of the control signal and being independent of the frequency of the vibration.

17.   The apparatus of claim 16, wherein the circuit includes a local microprocessor configured to receive from a host microprocessor information associated with an application, the control signal being produced based on the information, the local microprocessor configured to output the control signal to the actuator.

18.   The apparatus of claim 16, further comprising:
        a sensor configured to determine a position of the mass in a rotational degree of freedom.

19.   The apparatus of claim 16, wherein:
        a gamepad controller includes the housing, the actuator and the circuit, and
        the circuit is configured to receive information from a host microprocessor, the control signal being produced based on the information, the local microprocessor configured to determine when the vibrotactile sensations are to be output based on events occurring within a graphical environment associated with the host microprocessor.

20.   The apparatus of claim 16, wherein:
        a gamepad controller includes the housing, the actuator and the circuit, the gamepad controller including a joystick having two degrees of freedom, the gamepad controller configured to provide input to a host computer in response to a user manipulation, and

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the circuit is configured to receive information from the host microprocessor, the control signal being produced based on the information, the local microprocessor configured to determine when the vibrotactile sensations are to be output based on events occurring within a graphical environment associated with the host microprocessor.

21.   The apparatus of claim 16, wherein the actuator is included within a plurality of actuators, each actuator from the plurality of actuators being configured to rotate a mass uniquely associated with that actuator to collectively produce the vibration.

22.   The apparatus of claim 16, wherein the actuator is configured to receive power over an interface bus connecting the circuit to a host microprocessor.

23.   The apparatus of claim 16, further comprising:
an obstacle member disposed within the housing, the obstacle member defining a end portion of a range of motion of the mass, the circuit configured to drive the mass in a first direction, the obstacle member configured to move the mass in a second direction opposite the first direction when the mass impacts the obstacle member, the vibration being based on the control signal and at least in part by the mass impacting the obstacle member.

24.   The apparatus of claim 23, wherein the obstacle member is a hard stop.

25.   The apparatus of claim 23, wherein the obstacle member is a spring member including a compliance portion configured to increase energy in the movement of the mass in the second direction.

26.   A method, comprising:
receiving a command associated with a kinesthetic haptic effect, the kinesthetic haptic effect being associated with kinesthetic forces; and
mapping the kinesthetic haptic effect to a vibrotactile haptic effect, the vibrotactile haptic effect associated with vibrotactile forces to be output to a vibrotactile interface device.

27.   The method of claim 26, wherein the kinesthetic haptic effect is a periodic effect having a magnitude and a frequency, the vibrotactile haptic effect having its own magnitude and frequency, the magnitude and the frequency of the vibrotactile haptic effect corresponding to the magnitude and the frequency of the kinesthetic haptic effect, respectively.

28.   The method of claim 26, further comprising:
providing a control signal to an actuator of the vibrotactile interface device based on the vibrotactile haptic effect.

29.   The method of claim 26, wherein the kinesthetic haptic effect is a non-periodic effect, the vibrotactile haptic effect having its own magnitude, the magnitude of the vibrotactile haptic effect being based on a magnitude of the kinesthetic haptic effect.

30.   The method of claim 26, wherein the kinesthetic haptic effect is a spring effect, the vibrotactile haptic effect is output as a vibration if the spring effect has a magnitude above a predetermined threshold.

31.   The method of claim 26, wherein the kinesthetic haptic effect is a damper effect, the vibrotactile haptic effect is output as a vibration having a low frequency.

32.   The method of claim 26, wherein:

the kinesthetic haptic effect is a vector force effect, the vibrotactile haptic effect is output as a vibration,

the vibration is output via a small motor of the vibrotactile interface device if the vector force effect has a magnitude below a first threshold,

the vibration is output via a large motor of the vibrotactile interface device if the magnitude of the vector force effect is above the first threshold,

the vibration is output via both the large motor and the small motor if the magnitude of the vector force effect is above a second threshold.